USER MANUAL

IR236E

Advanced Infrared Fever-sensing System

Thanks for selecting us, we advise you to read the user manual carefully before using the camera, which will help you to use it properly. Please contact us if you have any questions.

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1. General

IR236E provides the solutions of the rapid screening over-temperature alarm for ports, customs and other human quarantine places. It Integrates high-resolution infrared detectors and high-end image processing technology, and adopts such computer application technologies as one-line transmission, intelligent alarm hint, multi-point face recognition, big-screen control interface to increase user experience and improve functions.

The comprehensive applications of network infrared and HD visible camera become the new trend of body temperature monitoring. Network Infrared thermal camera has the advantages of good real-time image, large image volume, strong anti-jamming capability, and can rapidly screen out the high-temperature crowds. It could take shot and display real-time dynamic temperature distribution image as TV cameras, make the fast imaging thermography in the large area. Under the situation of the crowds walking around in the long distance, it can also instantly find single or multi high-fever body. The working efficiency is higher than single-point thermal imager. HD visible light camera has the features of clear imaging and high resolution. After the infrared camera finds high-temperature target, it could to recognize target features and details by observing the HD visible light image, meanwhile it has many domestic pioneer technologies, including multi-target tracking and face recognition function.

The main features of IR236E include:

- Infrared, high-definition visible light dual network camera.
- DVR 24-hour online storage: Independent DVR remote access client-side; support online network dual video real-time output, while multiple client-sides can simultaneously access the remote video stored in DVR.
- High precision thermography: the industry standard of measurement accuracy of the infrared fever sensing is 0.3 ℃. The temperature measurement accuracy of the latest Guide product IR236 can reach 0.1 ℃, temperature resolution 0.04 ℃.
- Precise alarm and rich alarm function, convenient and rapid real-time alarm data processing and quick view of historical alarm data.
- Advanced image processing technology and rich UI experience: software has done a better improvement on user experience, and we pay more attention to display type of infrared imaging quality and alarm mode, adding the latest intelligent image processing algorithms, such as face recognition, Infrared & visible light automatic real-time registration, regional connectivity and rendering and so on.
- Modular design is adopted for thermcore, with the advantages of high-level integration, simple test, quick assembly and easy maintenance.
- Software supports large screen touch point control operation, making the product easier to use and operate.

2. Operation Specification

2.1 Precaution

- Do not directly point thermal camera at high-intensive radiation source, like the sun, welding machine.
- Don’t aim the thermal camera at high temperature target during boot-up the camera.

- When not use thermal imager, or in the transport process, please keep thermal camera in the protective packing case while it isn't in use or it is during the transportation.
- The camera combines a precision optical instruments and static sensitive electronic equipment. Please do not drop, strike or vibrate the camera and its accessories, and anti-static solutions should be made in case of damage.
- Do not disassemble the camera by yourself, if any faults, please contact with Guide, otherwise no warranty.

2.2 Maintenance and service

In order to keep the camera in a good working environment, please keep to the following requirements:

- Please carefully read the user manual before using the camera. If any problems, please contact us.
- Keep the camera stable during the operation.
- The working environment should be not beyond the limited environmental conditions defined by the camera.
- Do not use power supply that doesn't match the camera.
- Do not switch on or off the camera frequently. The interval time can't be less than 20 seconds.
- Do not pull, plug the external cable under the power-on situation; it is suggested that all electrical device should be cut off during pulling and plugging the cable.
- Pay attention to protect the external cables connected to the thermal camera.
- Do not use chemical solvents & thinner to scrub the lens. Please use clean, soft & dry cloth to wipe off it.
- There is one layer of antireflection coating on the surface of thermal imager lens, and it is only needed to be cleaned under the dirty situation, for Frequent scrubbing the lens would cause the lens coating wearing, Also please avoid touching the lens surface directly, as the acid substance of fingerprint would destroy the coating layer and lens surface, and only the dedicated lens cloth could be used.

3. System Installation Instruction

3.1 System composition

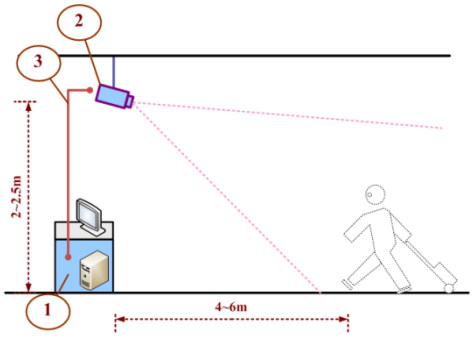


Fig. 3.1.1 System Composition

IR236E consists of the following items:

- Computer, monitor
- Infrared thermal camera
- cable

- DVR
- network switch

3.1.1 Equipment structure drawing and lines

- **Computer Interface Drawing**

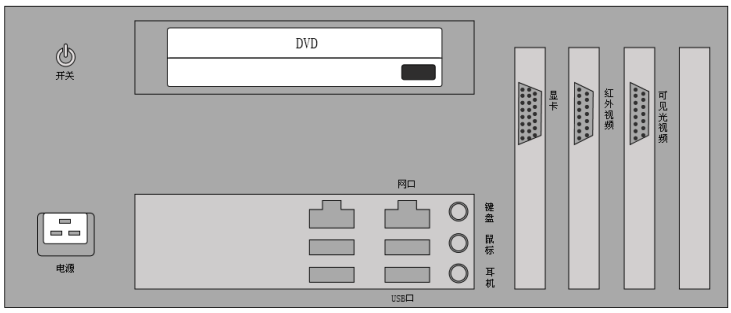


Fig. 3.1.2 Computer Interface Drawing

- **Thermal Camera**

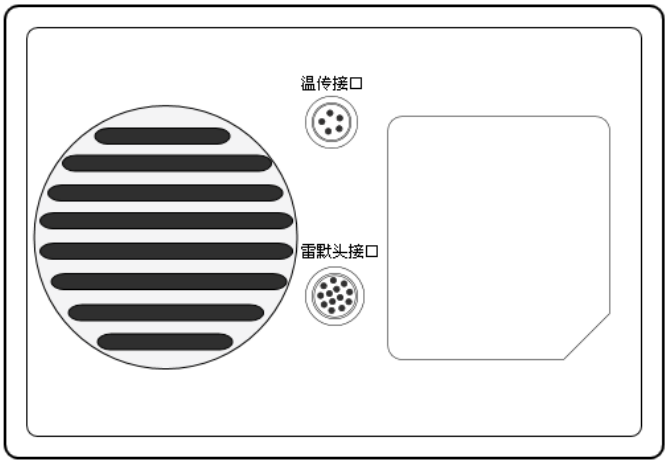


Fig. 3.1.3 Camera bask-side interface sketch

Interface name	Input / Output Signal
Ramo head interface	Plug IR camera power and network cable
Temperature sensor interface	Plug ambient temperature sensor

- **DVR**

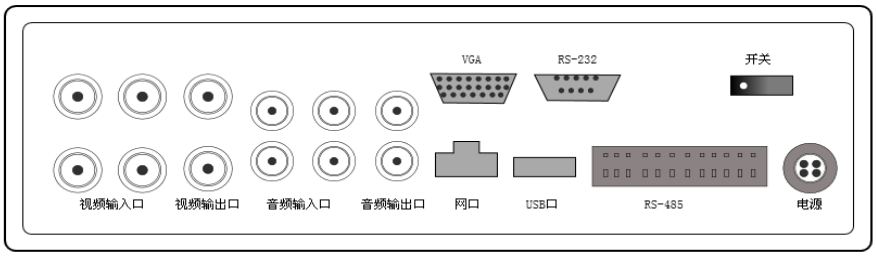


Fig. 3.1.4 DVR back-side interface sketch

- **Network switch**

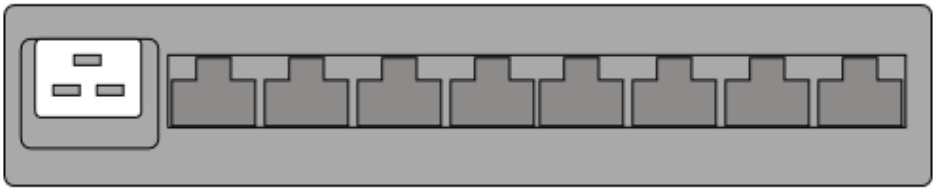


Fig. 3.1.5 Switch Interface Sketch

- **Wiring diagram among infrared camera, network switch, DVR, PC**

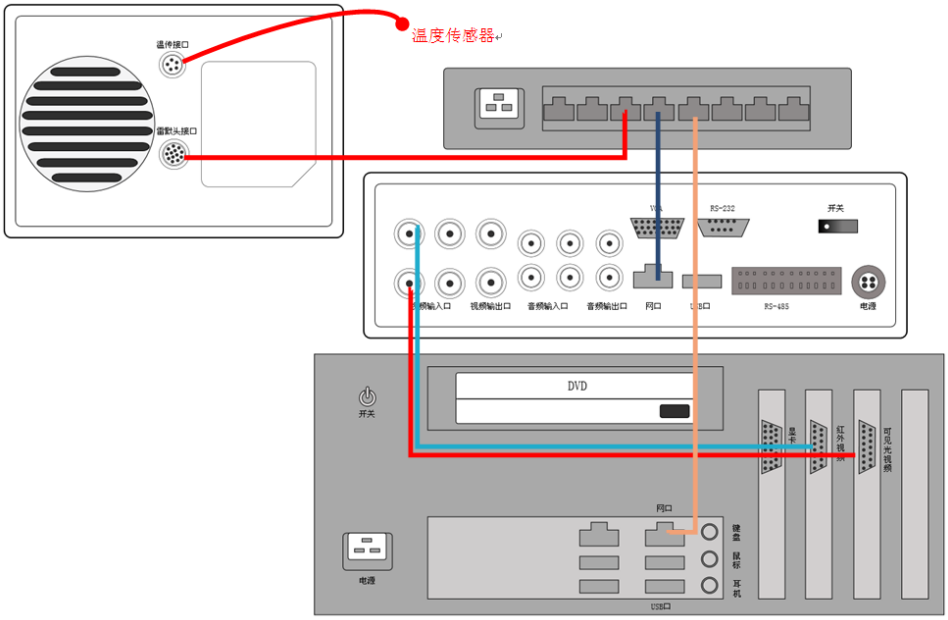


Fig. 3.1.6 Wiring diagram among infrared camera, network switch, DVR, PC

3.2 System software installation

3.2.1 Necessary environment for installation and operation

Enter the list "Framework 4.0", and then install dotNetFx40_Client_x86_x64.exe.

3.2.2 Install database

Enter the folder "Database", and then install Body Measure Database.exe. If unable to start the service after installation, please turn off anti-virus software, such as 360 security guards, and then try reinstalling. Specific steps are as follows:

- **Enter the database installation interface, such as Fig. 3.2.1**

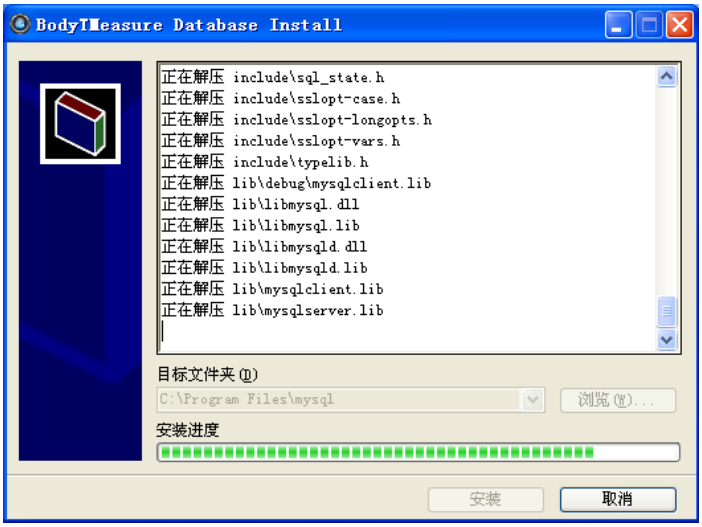


Fig. 3.2.1 Database installation interface

- **After the installation database is finished, Fig. 3.2.2 will pop up, indicating successful installation, otherwise the installation is failure.**

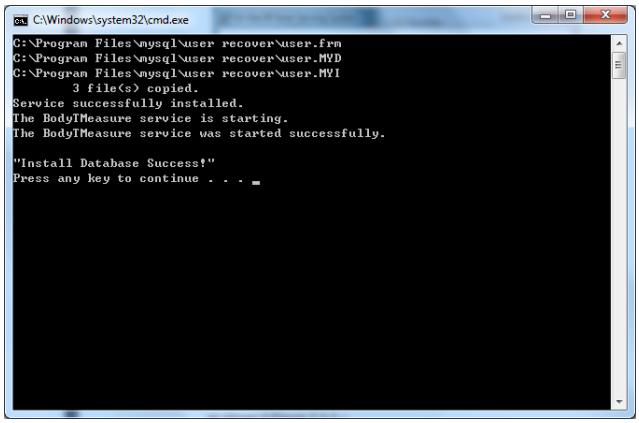


Fig. 3.2.2 Database installation tip

3.2.3 install monitor client-side software

Enter the folder "Install" and install setup.exe below the folder "LocalClient" on the appointed PC. If it can't run, directly double-click "IR236E.LocalClient.msi" for installation. Specific steps are as follows:

- Go to system installation interface, shown in Fig. 3.3.1:

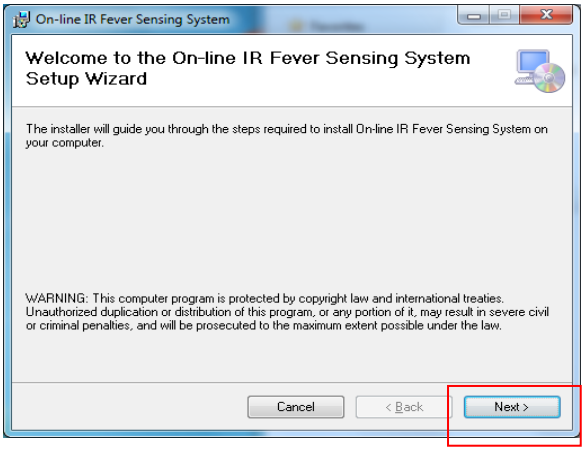


Fig. 3.3.1 System installation interface

- Click [Next] to enter into software title setting interface, setting the title as "Network type port access over temperature monitoring system", shown in Fig. 3.3.2.

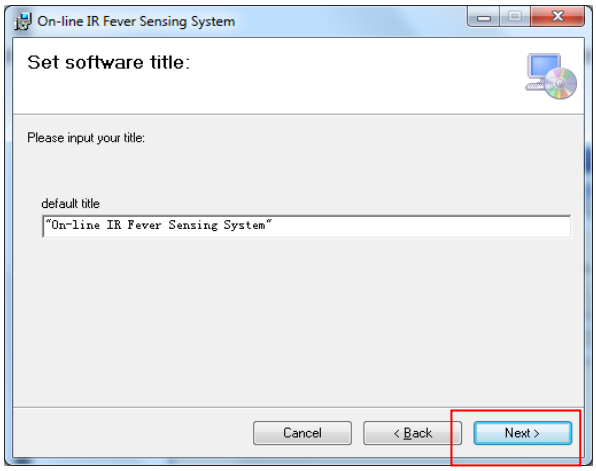


Fig. 3.3.2 Setting software title

- Click [Next], click [Browse], and select the installation path, such as C: \ Program Files\ Guide Infrared\, shown in Fig. 3.3.3.

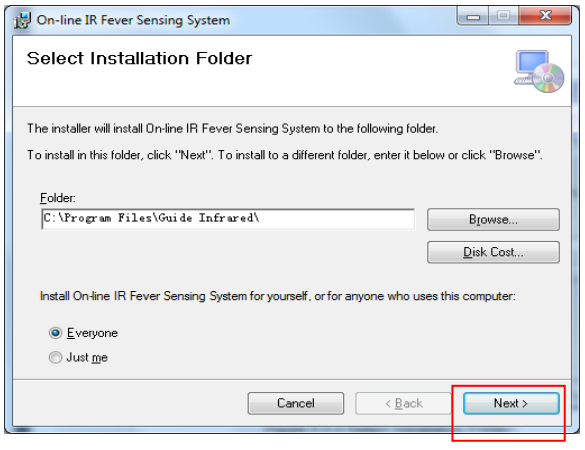


Fig. 3.3.3 Select installation folder

- Click [Next], shown in Fig. 3.3.4.

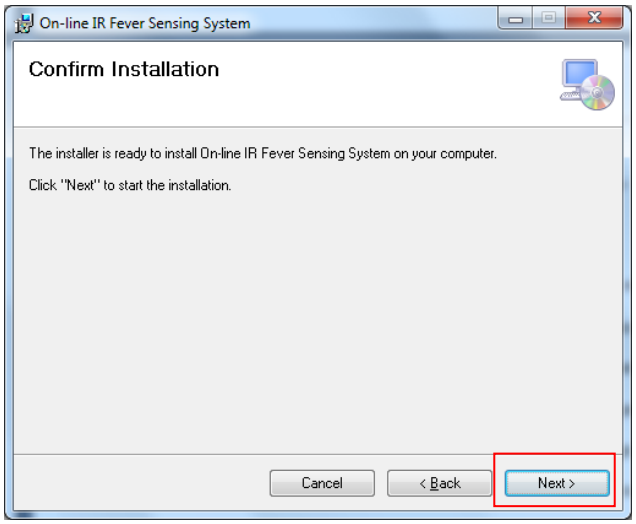


Fig. 3.3.4 confirm the installation

- Click [Next] shown in Fig. 3.3.5, successful installation. Close.

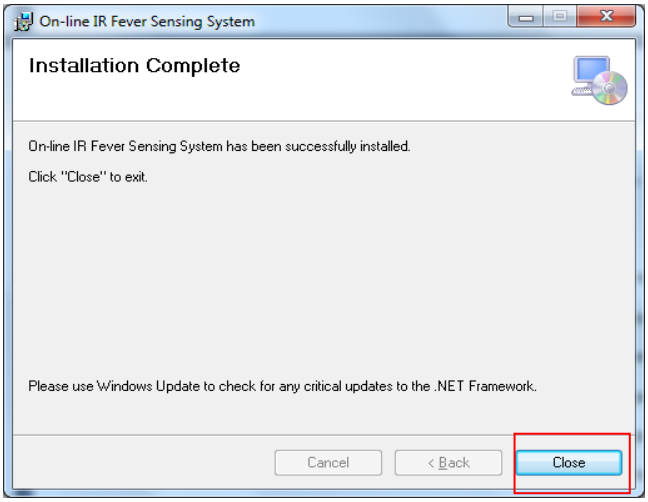


Fig. 3.3.5 Successful installation

- Client-side installation completed.

3.2.4 Install remote monitor client-side software

Enter the folder "Install" and install setup.exe below the folder "LocalClient" on the appointed PC. If it can't run, directly double-click "IRVideoPlayer_Setup.msi" for installation. Specific steps are the similar to those specified in 3.2.3.

4. Monitor Client-Side Function Instruction

4.1 Main interface function description

Start "Client-side", the client-side main interface is divided into expert mode and user mode. The system will determine to start expert mode interface or user mode interface according to the mode type and the current display resolution. Compared to user-mode interface expert mode interface increases device settings, infrared settings, alarm settings, system settings and other functions, and these settings are advanced settings, so the password is needed. The effect of expert mode interface is shown in Fig. 4.1.1.

Fig. 4.1.1 Client-side main interface

4.1.1 Device boot-up

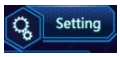
It is used for device status display and partial control; if device records exit in the database, it will be synchronized on the button, only need to click to open the device. Take the "No.2 device" 

in Fig. 5.1-Main interface, and you only need to click to open the device, if the device is successfully opened, the button will turn bright yellow 

; If there is no device records in the database, the button becomes dark 

.

4.1.2 Setting button

Click the Settings button 

to enter the parameter setting interface, including "device maintenance", "System Settings", "alarm setting ", "infrared video" parameter settings.

4.1.3 The latest alarm picture

It is used to display recent alarm snap shots.

4.1.4 Historical data button

Click to enter into alarm history data query interface for querying historical alarm records.

4.1.5 Palette setting

It is used for infrared pseudo-color display for the selected image palette. Click the "Palette Settings" button in Fig. 1.1, and the Palette tab control shown in Fig. 4.1.2 will pop up.

Fig. 4.1.2 Palette setting tab control

Solution is to click on the lower part of the tab  Button, or use the mouse to directly click on the palette.

4.1.6 Video adjustment

It is used for controlling the infrared "shutter compensation" and "Auto Focus", and the visible light zoom shown in Fig. 4.1.3:

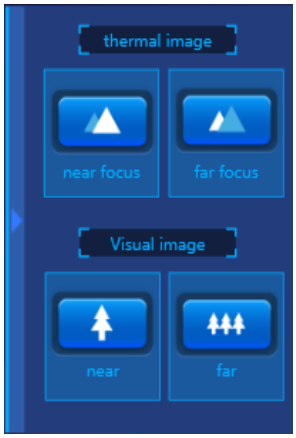


Fig. 4.1.3 Video adjustment tab control

4.1.7 Window control

It is used to control Infrared and visible light display and "double window" display shown in Fig. 4.1.4, 4.1.5, 4.1.6:

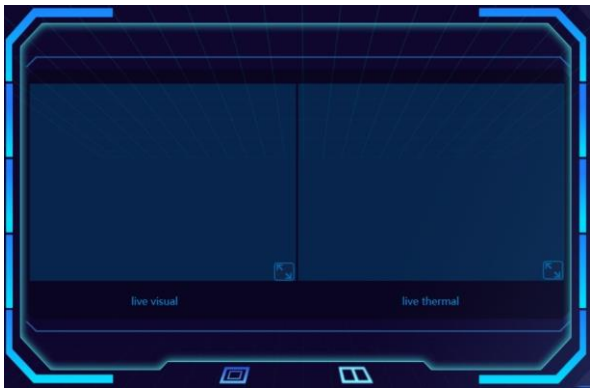
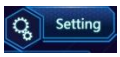


Fig. 4.1.4 Dual screen display

Fig. 4.1.5 Single screen infrared display

Fig. 4.1.6 Single Screen Visual light display

4.2 Advanced settings function

Click on the main interface 

button, and enter into Settings User Login interface shown in Fig. 4.2.1:

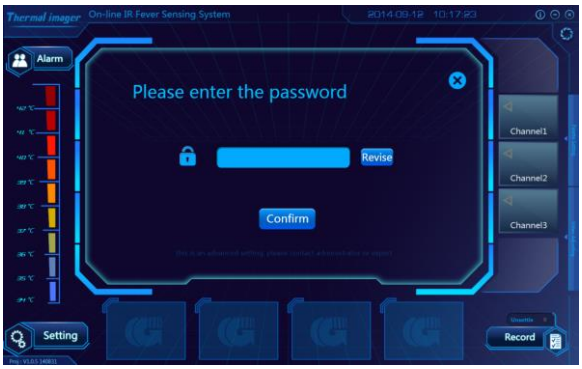


Fig.4.2.1 Client-side login interface

The interface can be used for the user to log into the setting interface by inputting the correct password. Setting interface is divided into four interfaces, including device settings, infrared settings, alarm settings, system settings four interfaces (described in detail as below).

The interface can also be used to modify the login password. Click 

Button to enter into Change Password interface. Enter the correct original password and set a new password and confirm it successfully. Click 

Button to complete modification shown in Fig. 4.2.2:

Fig. 4.2.2 Modify password interface

4.2.1 Device maintenance

Device maintenance interface is shown in Fig. 4.2.3:

Fig. 4.2.3 Device settings interface

- Search online device  : Click this button to automatically search for online devices and the display device information shown in No. 2 device, and automatically generates the device ID button  。

- Save device information  : After the device information is confirmed, click on this button to save the device records in the database.

- Delete device information  : It is used to remove the selected device information from the database. .

4.2.2 System Settings

System settings interface is shown in Fig. 4.2.4:

Fig. 4.2.4 System settings interface

- Sound & light alarm settings

Set the alarm mode sent from the system while the alarm happens.

(1) Permission alarm: choose to permit the alarm when the alarm event occurs, the "alarm" icon on the main interface 

turns blinking red 

. At the same time the system will issue a warning to remind staff by setting mode – or make color rendering to the alarming target on Infrared Photo, or sending sound alarm, or both. Conversely, if not checked, then when the alarm accident happens without any alarm process. This item is required to be selected.

(2) Permission rendering: select permission rendering; when the alarm occurs, the system automatically according to different alarm levels of infrared images of the target alarming area on the IR image alarm to display with the corresponding color. As shown in Fig. 4.2.5 bar alarm severity from low to high color rendering three levels respectively corresponding to yellow, pink, and red, for example, when a person's forehead area is displayed on the infrared image is red , indicating that this person serious fever. If not checked, when alarming the target area does not be any color rendering, if this time the "Allow Alarm" is turned on, the alarm only yellow crosshairs mark. at the alarm target "Allow Alarm" item activated, "Allow rendering" item is optional; "Allow rendering" activated, three rendering color can be changed, but not the proposed to be changed!

(3) Permission sound alarm: once selected, when the alarm occurs, the system will issue different voices alarm warning based on different grades of alarm; conversely, if not selected, there was no sound alarm. "Permission Alarm" item activated, "allowing sound alarm" item is optional; after "Allow sound alarm" is activated, and three alarm sounds can be changed. The more severe situation happens, and then the degree of the corresponding recommendation alarm sound would be more rapid, slight fever alarm sound can be a little more slowly.

(4) Set alarm temperature range: when the target temperature is within the setting temperature range (as described below 37.0 ℃ ~ 41.0 ℃), determine the alarm event occurs, an alarm event which is divided into three levels, including severe fever, fever and slight fever. Different-level levels alarm match different alarm mode.

Figure 4.2.5 Fever level setting

Slight fever Fever High fever

- Alarm sensitivity

Alarm sensitivity is divided into advanced, standard and user-defined modes. In the first two modes, the minimum alarm target was 4 and 8 pixels, unchangeable; when selecting user-defined mode, drag the mouse wheel to select the smallest alarm target size through the left mouse button.

- Alarm information save path

Set the save path of alarm images and video files in the hard disk.

(1) Auto deletion of alarm images: set the image saving time of recording alarm events in the hard disk; such as in the Fig. 4.2.4, the software would auto clean up the 45-day alarm directory during each boot-up.

(2) Auto recording during boot-up: After select this choice, the system will automatically start record IR and Visual video in the next boot-up if selected. Video file is saved under the “Video File”, and the default named after time.

4.2.3 Alarm area setting

It is used to set the shield area, set the blackbody area, set detecting head registration, shown in Fig. 4.2.6:

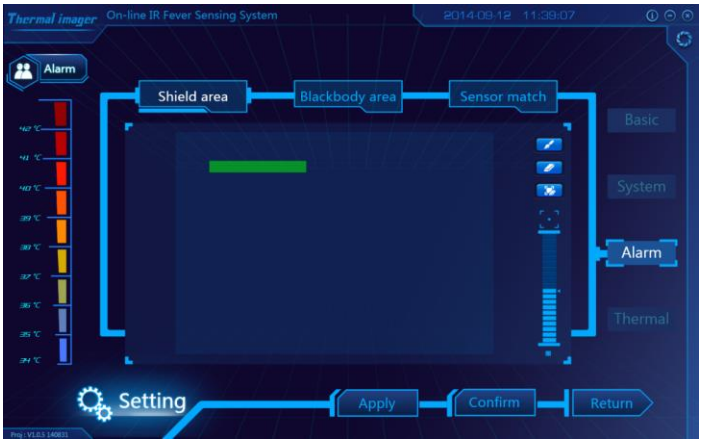
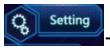


Fig. 4.2.6 Alarm setting interface:

In order to assure the result of properly observing temperature measurement, before temperature measurement, you need to set up the shield and black body areas, and match visible light camera and an infrared camera.

- Set shield area

For some high-temperature heat source exist in the monitoring area, such as light boxes, billboards, fast food restaurants, etc. Usually, the temperature of these heat sources is very close to body temperature, so the system is prone to cause false alarm. In order to remove these disturbances, these heat sources can be screen out, not alarm in this area.

(1) Click the "Setting” 

—>“Alarm setting” 

—>“Setting shield area” 

in Fig. 4.2.1 main interface， and enter into the setting interface of the shield area, shown in Fig. 4.2.6:

(2) Screen out the high-temperature interference source from the infrared image by the method of dragging the rectangle box with the left mouse (using the mouse wheel to adjust drawing box size).

(3) Click the "Apply" button below the window 

or "OK" button 

to save.

- Set blackbody area

Blackbody temperature regards the actual temperature of the blackbody as a reference temperature point. In order to get an accurate temperature, the blackbody area must be set.

1) Click the "Settings" button 

——〉“Alarm settings” 

——〉“Set blackbody area” 

in Fig. 4.2.1 main interface，and enter into the setting interface of the blackbody area, shown in Fig. 4.2.6:

2) Click the left mouse button to put the small check into the center of the blackbody infrared image (By mouse wheel to adjust the drawing box size);

3) Click the "Apply" button 

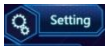
below the window or "Confirm" button 

to save.

- Detecting head registration

The system uses the infrared video and the visible video to process dual cursor simultaneously display, but because the FOV of the infrared camera is not the same with the FOV of visible camera, so during the installation, the two cameras couldn’t be completely parallel, resulting in the same target inconsistent. In order to accurately find the corresponding relationship of coordinates in the infrared and visible light images, video registration algorithm is added in the software. Obtain the mapping relationship between infrared and visible light areas through the three registration points of the visible and infrared areas. Through the mapping relationship, the exact coordinates of the high temperature target of the infrared images in the visible video can be calculated.

Specific operations are as follows:

1) Click the "Settings" button 

in Fig. 4.2.1 main interface——〉“Alarm settings” 

——〉“Detecting head registration” 

，and enter into the registration interface shown in Fig. 4.2.6. At this time three different colors of cursor will respectively appear in "infrared image" and "visible image" windows on the screen;

2) Click the left mouse button and move the cursor, and make the same color cursor to be in the same point of two images.

3) Click the "Apply" button 

below the window, or "Confirm" button 

to save.

4.2.4 Infrared parameter settings

Click the "Settings" button 

in Fig. 4.2.1 main interface,——〉“Infrared video” 

，and enter into the infrared video setting interface to adjust the system infrared temperature measurement parameters shown in Fig. 4.2.7:

Fig. 4.2.7 Infrared video setting interface

- Infrared temperature measurement coefficient

A series of parameters for temperature are set by the technician during the installation, and the user can't change them.

- Temperature measurement methods

Blackbody or shutter temperature measurement

- Body temperature difference correction

The value is the temperature difference between body temperature and surface temperature obtained by the camera, varying along with the current ambient temperature. It can be calculated by human body temperature measured by thermometer subtracting the temperature measured by thermal camera, and the higher the temperature correction, the higher the measurement temperature is.

(1) Manual correction

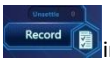
When the temperature value, obtained by the system automatically correcting the temperature difference between the surface and body temperature, is different from the situation on the site, manual correction function is needed to make the tiny correction for the deviation. Now "automatic correction" value on the surface and body temperature difference doesn't have any effect on the system measurement result. Surface and body temperature difference" under "manual modify" is based on the current value (default is 0 ℃) to increase 1 ℃, the temperature value displayed on the screen will arise 1 ℃; conversely, if the current value is based on the current value to decrease 1 ℃, the temperature displayed on the screen also decreased 1 ℃. This parameter can be positive, negative and decimal.

(2) Automatic correction

If the "automatic correction" function in "infrared video" is selected, the system will automatically add the "body and surface temperature difference" value into the temperature value; conversely, if not selected, this value doesn't make any effect on the final temperature value.

4.3 Historical data analysis

For the convenience of retrieval and access, the system can automatically store a series of visible light images and Infrared images into the hard disk of the main monitoring station during the alarm, while temperature value and the coordinate value for the alarm target are equipped in the images. Click the "historical data" button



in Fig.4.2.1 main interface, and enter into historical data view interface, view all alarm records shown in Fig. 4.3.1.

Fig. 4.3.1 Historical data interface

4.3.1 Historical record group operation

Enter into historical record interface; the default display is historical record that day, i.e. the thumbnail image and time, temperature, class information of the historical record group that day will show in the display area of the historical record group. Historical record group operation interface is shown in Fig. 4.3.2:

Fig. 4.3.2 Historical record group Information

(1) Showing historical record on specified date

Click  for Calendar controller shown in Fig. 4.3.3:

Fig. 4.3.3 Historical record control

Among them, on the top right corner of the date marked with a blue triangle indicates there are historical records that day, and if no mark, it indicates no historical record that day.

(2) Showing historical record in different classification

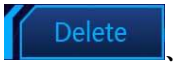
All historical records are divided into three kinds, including Settle, Unsettle, belonging and others. Click  Button---〉Select "Settle" / "Unsettle" / "Belonging and others" / "All", as shown in Fig. 4.3.4, then the corresponding type of records are displayed in the display area of historical record group.

Fig. 4.3.4 History record category

(3) Operation to the historical record

- Click the relevant records within the historical record group, and the detailed information of the current group will be displayed in display area of single group history.

- Click  to select historical record or click 

to select all historical record; click 

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below historical record interface to delete the selected record, to process to be "Belonging and others" type, to process to be “Settle" type.

4.3.2 Single group historical record

Single historical record display area shows the thumbnail photo of visible image of single historical record within currently selected historical record group, and selected single historical group visible and infrared images, shown in Figure 4.3.5:

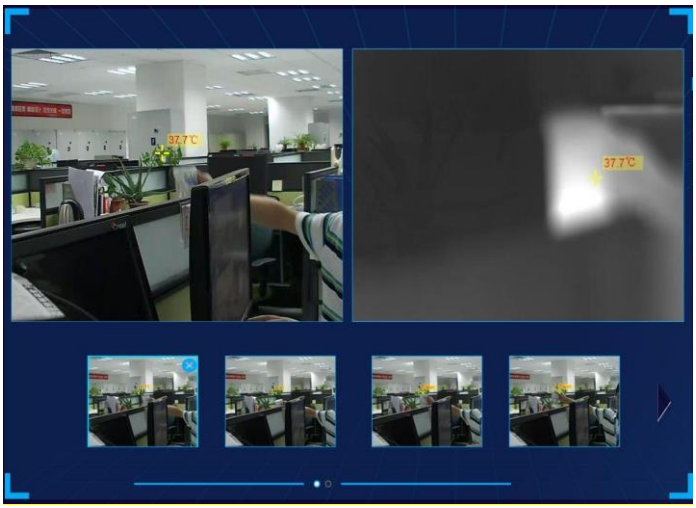


Fig. 4.3.5 Single group historical record

- Detail of single record

Click the visible thumbnail photo below Fig. 4.3.5, and the visible and infrared images are displayed in the center area of the single group record interface, and click to selected picture to delete this image.

- Multi-record paging display

Single group historical record thumbnail display area can show four records once, when the current group historical records is over four, click to display next page or click to enter into the previous page.

5. Remote Monitor Client-side Function Instruction

5.1 Main interface function introduction

The main interface after software operation is shown in Fig. 5.1.1:

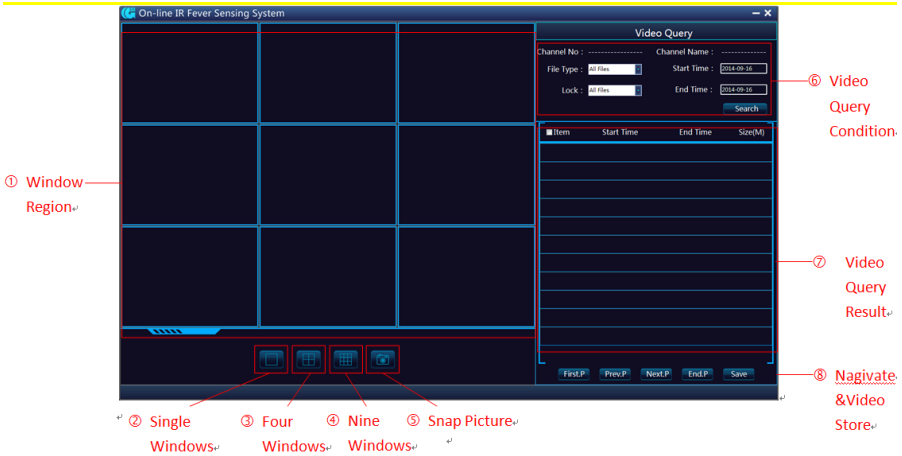


Fig. 5.1.1 Main interface

- Windows area: to display channel video and video recording, and support three modes including single window, four windows, and nine window.
- Single window: used for the currently selected video channel window to make single-window zoom display.
- Four windows: begin from the currently selected windows to display the four windows sequentially.
- Nine windows: software default is nine windows.
- Photo capture: capture for the currently selected real-time device channel video and video recording
- Video query condition setting: to set the video query condition of the currently selected device.
- Video query result: to display the query result, also the result selectable.

5.2 Add and delete device channel

- **Add device channel**

a. In any area of window area to click the mouse right button, Pop up 

menu, click mouse left button to click the menu, and the “add device channel dialog” will pop up shown in Fig. 4.2

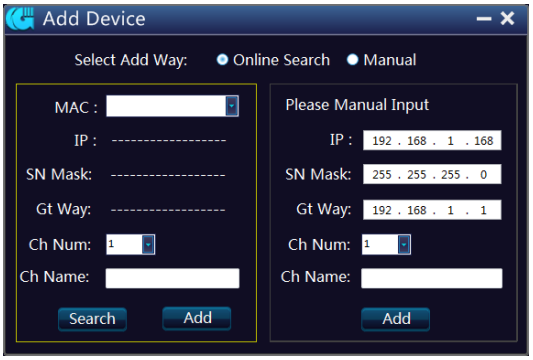


Fig. 4.2 Add device channel dialog

b. Click the search button 

on the add device channel dialogue, auto search online DVR device.

c. Click the MAC drop-down list 

to choose the device.

d. Click the channel Num. drop-down list 

to choose the video channel.

e. Finally, click the add button 

, to finish the device channel adding.

- **Delete device channel**

To delete the device channel, you only need to click the mouse right button on the open device channel window , 

menu will pop up, and click the menu to delete the device channel.

5.3 Video management

- **Query video**

Select the open device channel window and set the video query condition, then click the search button 

on the main interface to search the video on the corresponding device channel

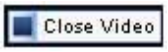
- **Open video**

In the video checking result area, on the video file that you hope to open to double click the mouse left button, then watch the video on the corresponding device channel.

- **Video control**

Move the mouse to the video window , then you could see the control bar Auto display 
, for controlling the video playback progress by pulling & dragging.

- **Close video**

Move the mouse to the video window, and click mouse right button, 

menu will pop up, and press this button to close video.

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